CLAIMS

What is claimed is:

1. A method for allocating resources in a wireless time division duplex communication system having a variable number of time slots allocated to support either uplink or downlink communications, the method comprising:

determining time slots available for allocation to support either uplink or downlink communications;

determining potential switching points between the available time slots, the switching points representing a change between time slots used to support uplink and downlink communications;

for each switching point:

for each of uplink and downlink, determining a number of user that can be supported by comparing a blocking probability of real time services with a required blocking probability of real time services and comparing an average delay of non-real time services with a required average delay of non-real time services; and

selecting a minimum of the uplink and downlink users that can be supported as the number of users that can be supported for that switching point; and

selecting the switching point having a maximum number of users that can be supported; and

allocating the available uplink and downlink time slots based on the selected switch point.

2. The method of claim 1 wherein the comparing the blocking probability of real time services with the required blocking probability is by determining whether the blocking probability of real time services is less than or equal to the required blocking probability.

3. The method of claim 2 wherein the required probability of a particular user being blocked is based on a service type of that particular user.

4. The method of claim 1 wherein the comparing the average delay of non-real time services with the required average delay of non-real time services is by determining whether the average delay of non-real time services is less than or equal to the required average delay of non-real time services.

5. The method of claim 4 wherein the required average delay of non-real time services for a particular user is based on a service type of that particular user.

6. A method for allocating resources in a wireless frequency division duplex communication system having a variable number of frequencies allocated to support either uplink or downlink communications, the method comprising:

determining frequencies available for allocation to support either uplink or downlink communications;

determining potential switching points between the available frequencies, the switching points representing a change between frequencies used to support uplink and downlink communications;

for each switching point:

for each of uplink and downlink, determining a number of user that can be supported by comparing a blocking probability of real time services with a required blocking probability of real time services and comparing an average delay of non-real time services with a required average delay of non-real time services; and

selecting a minimum of the uplink and downlink users that can be supported as the number of users that can be supported for that switching point; and

selecting the switching point having a maximum number of users that can be supported; and

allocating the available uplink and downlink frequencies based on the selected switch point.

7. The method of claim 6 wherein the comparing the blocking probability of real time services with the required blocking probability is by determining whether the blocking probability of real time services is less than or equal to the required blocking probability.

8. The method of claim 7 wherein the required probability of a particular user being blocked is based on a service type of that particular user.

9. The method of claim 6 wherein the comparing the average delay of non-real time services with the required average delay of non-real time services is by determining whether the average delay of non-real time services is less than or equal to the required average delay of non-real time services.

10. The method of claim 9 wherein the required average delay of non-real time services for a particular user is based on a service type of that particular user.

11. A radio network controller (RNC) allocating resources where a variable number of time slots can be allocated to support either uplink or downlink communications, the RNC comprising:

means for determining time slots available for allocation to support either uplink or downlink communications;

means for determining potential switching points between the available time slots, the switching points representing a change between time slots used to support uplink and downlink communications;

means for each switching point: for each of uplink and downlink, determining a number of user that can be supported by comparing a blocking probability of real time services with a required blocking probability of real time services and comparing an average delay of non-real time services with a required average delay of non-real time services; and selecting a minimum of the uplink and downlink users that can be supported as the number of users that can be supported for that switching point; and

means for selecting the switching point having a maximum number of users that can be supported; and

means for allocating the available uplink and downlink time slots based on the selected switch point.

12. The RNC of claim 11 wherein the comparing the blocking probability of real time services with the required blocking probability is by determining whether the blocking probability of real time services is less than or equal to the required blocking probability.

13. The RNC of claim 12 wherein the required probability of a particular user being blocked is based on a service type of that particular user.

14. The RNC of claim 11 wherein the comparing the average delay of non-real time services with the required average delay of non-real time services is by determining whether the average delay of non-real time services is less than or equal to the required average delay of non-real time services.

15. The RNC of claim 14 wherein the required average delay of non-real time services for a particular user is based on a service type of that particular user.

16. A radio network controller (RNC) allocating resources where a variable number of frequencies can be allocated to support either uplink or downlink communications, the RNC comprising:

means for determining frequencies available for allocation to support either uplink or downlink communications;

means for determining potential switching points between the available frequencies, the switching points representing a change between frequencies used to support uplink and downlink communications;

means for each switching point: for each of uplink and downlink, determining a number of user that can be supported by comparing a blocking probability of real time services with a required blocking probability of real time services and comparing an average delay of non-real time services with a required average delay of non-real time services; and selecting a minimum of the uplink and downlink users that can be supported as the number of users that can be supported for that switching point; and

means for selecting the switching point having a maximum number of users that can be supported; and

means for allocating the available uplink and downlink frequencies based on the selected switch point.

17. The RNC of claim 16 wherein the comparing the blocking probability of real time services with the required blocking probability is by determining whether the blocking probability of real time services is less than or equal to the required blocking probability.

18. The RNC of claim 17 wherein the required probability of a particular user being blocked is based on a service type of that particular user.

19. The RNC of claim 16 wherein the comparing the average delay of non-real time services with the required average delay of non-real time services is by determining whether the average delay of non-real time services is less than or equal to the required average delay of non-real time services.

20. The RNC of claim 19 wherein the required average delay of non-real time services for a particular user is based on a service type of that particular user.